LEONARD J. REDER

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OBJECTIVE: Application and development engineering creating image processing and/or multimedia software and systems.

HIGHLIGHTS OF QUALIFICATIONS

- Unique ability to rapidly take ill-defined requirements and develop software to meet them.
- Have led small teams and demonstrated successful completion of projects on low budgets and short schedules.
- Work effectively in a small team environments.
- Demonstrated ability to present clear and concise briefings at conferences and to clients.
- Talent for demonstrating software solutions and teaching them to others.
- Rapid prototyping with scripting languages (Tcl/Tk, Perl, IDL, and Python).
- Object oriented development experience using design patterns (C++, incrTCL).
- Experience implementing parameter estimation algorithms and matched filters for special purpose real time detection and display systems.
- Familiar with 35mm Film Recorders, Video Switchers, Video Tape Formats and Specialized Video Test Equipment.
- Experienced with compression algorithms, multimedia standard formats: Quicktime, OMF (now AAF), AIFF, TIFF and SMPTE film and video standards (HDTV, SDTV and Metadata).
- SGI and VxWorks Real Time Programming Experience.
- Development experience utilizing CORBA (MICO ORB) and OpenGL.
- Former Principle Editorial/Post Software Engineer with Warner Bros. Feature Animation.
- Former Task Lead in the Image Assessment Department of Arete Associates.

EDUCATION

Certificate in Digital Signal Processing, 1995
(Also completed courses in "3D Graphic Programming Techniques" and Post-Production)
UCLA Extension, Los Angeles, CA.

M.S. Electrical Engineering, Emphasis on DSP and Image Processing, 1990
University of Southern California, Los Angeles, CA.

B.S. Electronic Engineering, 1981
California Polytechnic State University, San Luis Obispo, CA.

PROFESSIONAL EXPERIENCE

1999-Present **Jet Propulsion Laboratory**, Pasadena, CA.
Interferometry Systems Section

- Software Development for Support of Keck Interferometer Project
  1. Science sequencer development using Rhapsody CASE tool.
  2. Sequencer development for sidereal target generation to achieve first fringes with interferometer.

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PROFESSIONAL EXPERIENCE
(continued)

1999-Present **Jet Propulsion Laboratory (continued)**, Pasadena, CA.
Interferometry Systems Section

3. Conceptualized and implemented "Aligner" UI which allows optics engineers to perform alignment of optics spread over an 80m baseline. This application was not in the original plan but has saved many engineers countless hours.
4. Integration of real-time control software for optical delay line. The working delay line achieved 15nm RMS tracking performance.

1996-1999 **Warner Bros. Feature Animation**, Glendale, CA.
Digital Post Production Department, Principle Editorial Software Engineer

- Developed digital dailies player for screening room and desktop playback of high resolution uncompressed shots at 24 fps real time rates. Desktop animation player capable of retiming individual frames and multiscene playback and editing.
- Integration of Editorial/Post Production Department with Production Animation Systems.
  1. Created software for automatic frame annotation, and generation of OMF/QuickTime movie files.
  2. Implemented electronic slate program used company wide.
  3. Created software to automatically breakdown audio into scenes for animation.
  4. Developed a NextStep GUI audio trim tool for use in pencil test.
  5. Instructed editors in development of editorial procedures and practices.
  6. Member of the SMPTE working group on editorial procedures and practices (early metadata standards work!).
- Implemented Intranet web server for previewing animated scenes. Management of Web development projects, Liquid Audio Sound Effects Server, Story Reel Previews Generation and Automatic Sequence Assembly from EDL for Preview.
- Introduced use of multimedia techniques in the story reel production process (utilizing Adobe Photoshop, Adobe After Effects, and MacroMedia Director programs with Avid).
- Developed digital film dissolve/fade generation software, film shoot batch queue interface, and film annotation software for use with Celco film recorders.

1988-1996 **Arete Associates**, Sherman Oaks, CA.
Image Assessment Department, Staff Engineer/Task Leader

- Development of system concepts and implementation solutions to meet requirements of real-time image processing and display systems.
  1. Established real-time systems integration laboratory
  2. Coding of LMS, classical spectral estimation, matched filters for target detection.
  3. Integration of RISC & CISC processors into real-time image processing systems.
  4. Design, Test, and Integration of CCD camera/data acquisition systems.
  5. Developed real-time Lidar (laser radar) image display processor that was successfully flown on a US Navy P3 aircraft.
- Prepared and presented briefings on real-time and non-real-time systems to customers which resulted in additional business.
  1. Formulated system solutions for Lidar, Radar, SAR, and passive multispectral imaging applications.
  2. Production of videos to demonstrate real-time processing and simulations.
- Design and configuration of MAC/SGI based animation recording and editing facility.
  1. Integrated high speed fddi fiber optic network.
- Responsible for installation, administration and periodic upgrading of corporate internet connectivity.
  1. Domain Name Service (DNS), Email, and NFS configuration.

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PROFESSIONAL EXPERIENCE
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1985-1988 **Symbolics Inc**., Westwood, CA.
Graphics Division, Hardware Developer

- Principal designer of high-speed, high-resolution, color display system for Symbolics computers.
  1. Designed with LSI Logic CMOS gate array technology.
  2. Developed simulation software with timing diagram display capability to simulate above array.

1982-1985 **Jet Propulsion Laboratory**, Pasadena, CA.
Communications Systems Research Section

- Designed and implemented digital signal processors; both hardware and software for various JPL R&D projects. These include:
  1. Simulated Artillery Weapons Effects Project acoustic range estimator DSP.
  2. Global Positioning Satellite receiver for high dynamic tracking applications (TMS320 FFT processor).
  3. Experimental Symbol Stream Combiner for demonstration of Deep Space Network antenna arraying.

PUBLICATIONS

Leonard J. Reder, Thomas G. Lockhart, Kenneth C. Ko, Benjamin T. Smith, Using Scripting Languages in Optical Interferometry, SPIE Advanced Telescope and Instrumentation Control Software II Conference 4848, Waikoloa, HI, August 2002.

G. van Belle, M. Colavita, R. Ligon, J. Moore, D. Palmer, L. Reder, and R. Smythe, The Keck Interferometer Autoaligner, SPIE Advanced Telescope and Instrumentation Interferometry for Optical Astronomy II Conference 4838, Waikoloa, HI, August 2002.

Leonard J. Reder, Michael Farris, A Tour Up The Gray Scale Vector of the RGB Color Cube: How Computer Graphics Color Space Relate to Digital Video Color Difference Space, SMPTE Journal, Vol.111, No. 7, Page 330-342, July-August 2002.

Gregg Rabideau, Leonard Reder, Steve Chien, Andrew Booth, Automated Planning for Interferometer Configuration and Control, IEEE Aerospace Conference, Big Sky, MT., March 2001.

L. Reder and G. Takahashi, Implementation of Intranet Scene Preview for Feature Animation, SMPTE Journal, Vol. 108 No. 10, Page 696-709, Oct. 1999.

COMPUTER SKILLS

Languages: C, C++, Perl, HTML, Tcl/Tk, IDL, Common Lisp, Fortran, Assembly languages
Some JAVA and Python

Systems: UNIX (SunOS, SGI, HP/UX), DOS/Windows, Apple Macintosh OS, NextStep, VxWorks, OS9, MCOS (i860 real-time operating system).

OTHER RELEVANT TRAINING

UCLA Extension Courses:
Using Design Pattern, Frameworks, & CORBA to Develop Object-Oriented Communication Systems
JAVA Programming Fundamentals
Discrete Kalman Filtering
Principles of Object Oriented Software Design using C++, Advanced "C" Programming
Digital Filtering, Advanced Digital Signal Processing, Introduction to Optimal Estimation
3D Graphic Programming Techniques: Modeling & Rendering